<b>Work Ord</b> <i>May-14-12 9:17</i>		467		*844	167*			Sh	ip	May	Page
Item ID: Revision ID:	D212-725-1			Accept	*N900	<b>040</b>	100	)*	Setup St	11	IS1*
Item Name:		E BELL CRANK ASSE							51	<sub>ob</sub> *ν	182*
Start Date:	14/05/2012	Start Qty: 2.00	*2*		Cust Item I	D:					
Required Date: Reference:	28/05/2012	Req'd Qty: 2.00	*2*		Customer:						
Approvals:	Process Pla	in: MLJ	Date: 12/05/15	Tooling: SPC (Y/N):		ate:			Run Sta	art *\ op *\	IR1* IR2*
Sequence ID/ Work Center II	<b>D</b>	Operation Description		Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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*11 <b>∩</b> *		Memo		0.00				_2_	:		4/190

Quality Control

W/O:			WC	ORK ORDER CHANG	BES				
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<b>Work Ord</b> <i>May-14-12 9:1</i>		467		*844	67*							Page	e 2
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Item Name: Start Date: Required Date Reference:	14/05/2012	E BELL CRANK ASSEME Start Qty: 2.00 Req'd Qty: 2.00	*2* *2*		Cust Item II Customer:	D:				этор	*N	S2*	
Approvals:	Process Pla	•	Date:	Tooling: SPC (Y/N):		te:			Run	Start Stop	*N *N	R1* R2*	# #
Sequence ID/ Work Center I 120 *120* SprayPaint Spray Painting		Operation Description Spray Painting per QSI005 4  Memo ***Mask bearing 1- Prime and pain	g prior to prime and	Set Up/ Run Hours 0.00 0.00 paint***	Tool ID	Tool #	Plan Code	Accep Qty —Ad		Qty :	Reject Number	Insp. Stamp	(
130 *130* QC Quality Control		QC14- Inspect Spray Paint  Memo		0.00 S 17 106 ( bt.)				R			<u></u>		

140

Identify as per dwg & Stock Location:\_ 0.00

\*140\* Packaging

Memo

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Packaging

# **Dart Aerospace Ltd WORK ORDER CHANGES** W/O: **Approval Approval** Qty DATE **STEP** PROCEDURE CHANGE By Date Chief Eng / QC Inspector Prod Mar Part No: \_\_\_\_\_\_ PAR #: \_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_ Date: \_\_\_\_ Resolution: \_\_\_\_\_ Disposition: \_\_\_\_ QA: N/C Closed: \_\_\_\_ Date: \_\_\_\_ **WORK ORDER NON-CONFORMANCE (NCR)** NCR: **Corrective Action** Section B Verification **Approval Description of NC** Approval **STEP** DATE Sign & **Action Description** Initial Section C Chief Eng QC Inspector Section A Date Chief Eng Chief Eng

Work Order ID 84467 May-14-12 9:17:12 AM Item ID: D212-725-1-901 Accept \*N900040100\* Setup Start **Revision ID:** COLLECTIVE BELL CRANK ASSEMBLY Item Name: **Start Date:** Start Qty: 2.00 14/05/2012 **Cust Item ID: Required Date:** 28/05/2012 **Req'd Qty:** 2.00 **Customer:** Reference: Run Start **Process Plan:** Approvals: Date: Tooling: Date: Stop QC: Date: SPC (Y/N): Date: Sequence ID/ Operation Set Up/ Tool ID Reject Tool # Plan Accept Reject

**Run Hours** 

0.00

\*150\*

150

**Work Center ID** 

Memo 0.00

QC21- Final Inspection - Work Order Release

Description

Quality Control

MLJ 12/06/08

Number

Code

Qty

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Page 3

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W/O:		······································	WC	ORK ORDER CHANG	GES					
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Page 1

Work Order ID: 84467

\*84467\*

GA

Parent Item:

D212-725-1-901

\*D212-725-1-901\*

Parent Item Name: COLLECTIVE BELL CRANK ASSEMBLY

**Start Date:** 14/05/2012

**Required Date: 28/05/2012** 

Start Qty: 2.00

Required Qty: 2.00

2 1 12-06-07

Comments:

IPP Rev:A now made in house DD 10.02.08 verified by:JLM IPP Rev:B as per ECN10-532 DD 10.04.08 verified by:JLM Ipp Rev:C Added "Critical

Part"Note 10-06-02 Verified

By:DD

\*\*\*\*Critical Part,MRB decisions on this part may only be performed by DART DE#02. Any changes to the design, manufacturing process, approved operating enviroment, and design loading spectrum will require a review of the fatigue

evaluation for this part\*\*\*\*\*\*\*\*\*\*\*\*

	Replacement tem ID	. Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
120-013-3A		Purchased	No			100	Each	19.0000	1	2			
*120-013-34	<b>7</b> *								**			<i>y</i> .	
sieeve .				Location 1	<u> </u>	Loc	<u>Oty</u>	Loc Code				,	
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120-015-5A		Purchased	No			100	Each	15.0000	1	2			
*120-015-5A	7*			• •	<b>. ♣. \$</b>				**				
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D212-725-1-007		Manufactured	No	,		100	Each	0.0000	1	2			
*D212-725-*COLLECTIVE BELL CRANK	1-007*	•		8	14622				**	2	A 12	2-062	07
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*MS276433	*								**				
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Dart Ae	rospace	e Ltd							*
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**Picklist Print** 

May-14-12 9:17:17 AM

Page 2

Work Order ID: 84467

\*84467\*

Parent Item:

D212-725-1-901

\*D212-725-1-901\*

Parent Item Name: COLLECTIVE BELL CRANK ASSEMBLY

**Start Date:** 14/05/2012

**Required Date: 28/05/2012** 

Start Qty: 2.00

Required Qty: 2.00

MS276475

Purchased

No

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Each

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Loc Code

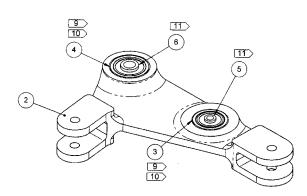
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ITEM	QTY -901	PART NUMBER	DESCRIPTION
1	Х	D212-725-1-901	COLLECTIVE BELLCRANK ASS'Y
2	1	D212-725-1-007	COLLECTIVE BELLCRANK
3	1	120-013-3A	SLEEVE
4	1	120-015-5A	SLEEVE
5	1	MS27643-3	BEARING
6	1	MS27647-5	BEARING



#### D212-725-1-901 COLLECTIVE BELLCRANK ASSY

CRITICAL PART
MRB DECISIONS ON THIS PART MAY ONLY BE PERFORMED BY
DART DEM/2. ANY CHANGES TO THE DESIGN, MANUFACTURING
PROCESS, APPROVED OPERATING ENVIRONMENT, AND DESIGN
LOADING SPECTRUM WILL REQUIRE A REVIEW OF THE FATIGUE
EVALUATION FOR THIS PART.

RETURN TO ENGINEERING UNCONTROLLED COPY SUBJECT TO AMENDMENT WITHOUT NOTICE WORK ORDER NO. 84467 MW 12/05/14

SHOP COPY



Α NEW ISSUE 11.02.24 REV. DESCRIPTION BY DATE DESIGN DC DART AEROSPACE LTD DRAWN RF HAWKESBURY, ONTARIO, CANADA CHECKED DRAWING NO. REV. A D4215 MFG. APPR. SHEET 1 OF 2 APPROVED SCALE DE APPR. COLLECTIVE BELLCRANK NTS COPYRIGHT © 2011 BY DART AEROSPACE LTD
THIS DOCUMENT IS PRIVATE AND COMPRIENTIAL AND IS SUPPLIED ON THE EMPRESS CONDITION OF TO BE USED FOR ANY PURPOSE OR COPPED OR COMMUNICATED TO ANY OTHER PRESS. DATE 11.02.24

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С

NOTES:
1) MATERIAL: N/A
2) FINISH: PRIME YELLOW PER DART QSI 005 4.2
3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
4) UNITS: INCHES UNLESS OTHERWISE NOTED
5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
6) IDENTIFICATION: IDENTIFY PER QSI 044 6.1

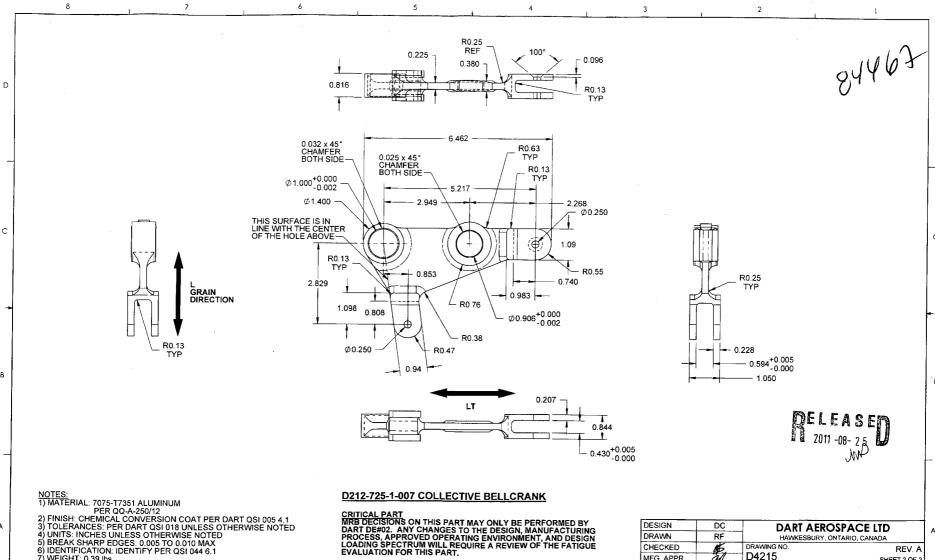
7) WEIGHT: 0.68 lbs

7) WEIGHT: 0.68 lbs
8) SWAGE/STAKE PER QSI 002
9) SLEEVE ID AND OD MAY BE ADJUSTED TO PROVIDE PROPER FIT
10) SLEEVE SHOULD FIT INTO BELLCRANK USING FINGER PRESSURE ONLY
11) BEARING SHOULD FIT INTO SLEEVE USING FINGER PRESSURE ONLY

Dart Aerospace Ltd	Dart	Aeros	pace	Ltd
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MRB DECISIONS ON THIS PART MAY ONLY BE PERFORMED BY
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PROCESS, APPROVED OPERATING ENVIRONMENT, AND DESIGN
LOADING SPECTRUM WILL REQUIRE A REVIEW OF THE FAT

DESIGN	DC	DART AEROSPACE LTD
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APPROVED	Al I	TITLE SCALE
DE APPR.	-7/4-	COLLECTIVE BELLCRANK NTS
DATE 11.02.24		COPYRIGHT © 2011 BY DART AEROSPACE LTD.  THIS DOCUMENT IS PRAITE AND COMPRISHING, MAD IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS  NOT TO BE USED FOR ANY PURPOSE ON COMPLICATED TO ANY OTHER PERSON WITHOUT  WRITTEN PERMISSION PROGLARAT RESORANCE LTD.

6) IDENTIFICATION. IDENTIFY FER QUI 97.0. 7) WEIGHT: 0.39 lbs 8) LPI PER ASTM 1417 LEVEL 2 9) SURFACE FINISH TO BE NO GREATER THAN 80 MICROINCH

8

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W/O:		WORK ORDER CHANGES						,			
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## **Ring Staking Procedure:**

Ring staking is used on steel and aluminum sleeves. Ring stake is centered on the sleeve and lays over a portion of sleeve to the part and a portion of sleeve to the bearing as shown in Figure 1. Refer to Table 1 for the applicable tools.

Ring stake as follows:

#### **CAUTION**

EXTREME CARE MUST BE EXERCISED TO AVOID ANY CONTAMINATION OF BEARING DURING ALL PHASES OF HANDLING AND INSTALLATION.

- 1.1 Measure the bore of the part, new bearing and new bearing sleeve to make sure dimensions will provide the interference fit given in Table 2.
- 1.2 Apply coating, as specified in Table 2, to the outside diameter of the new sleeve and to the mating bore in the part.
- 1.3 While coating is wet, press the sleeve into the part with the bearing/sleeve removal and installation tool set. See Figure 1. The sleeve must be equally centered from each side of the part.
- 1.4 Apply coating, as specified in Table 2, to the outside diameter of a new bearing and to the inside diameter of the previously installed sleeve. Avoid excessive application of coating and do not apply to the bearing seals or shields

#### CAUTION

DURING BEARING INSTALLATION, MAKE SURE YOU APPLY PRESSURE ONLY TO THE OUTER RACE. DO NOT APPLY PRESSURE TO THE INNER RACE AND SPHERICAL BALL OF THE BEARING OR DAMAGE MAY OCCUR.

- 1.5 While coating is wet, press the new bearing into the sleeve with the bearing/sleeve removal and installation tool set. See Figure 1. The bearing must be equally centered from each side of the part.
- 1.6 Select the applicable ring staking tool given in Table 1. Ring stake to obtain required dimensions on both sides of the sleeve as shown in Figure 2.
- 1.7 Clean any excess coating with clean cheesecloth (C-486) moistened with dry-cleaning solvent (C-304).
- 1.8 Make sure there is no movement or looseness of the bearing outer race in the bore of the part.
- 1.9 Examine the bearing for smooth rotation and breakout (misalignment), breakaway or rotational (roll) torque as specified in Table 1.

Table 1 – Staking Tool Set Application

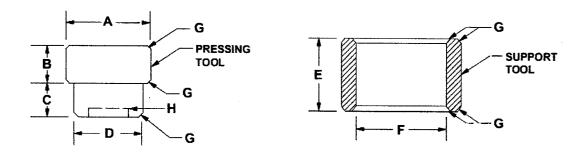
TOOL PART NO.	SLEEVE PART NO.	MANUFACTURER'S	MILITARY STANDARD
		BEARING PART NO.	BEARING PART NO.
T101873-5	120-013-3	DSP3 and DSRP3	MS27643-3
T101873-11	120-015-5	DW5	MS27647-5

Table 2 - Bearing and Sleeve Replacement Data

COMPONENT	BEARING P/N AND HOLE (BORE) SIZE FOR BEARING	SLEEVE P/N AND HOLE (BORE) SIZE FOR SLEEVE	TYPE OF STAKE AND TOOL NUMBER
D212-725-1-901	MS27647-5 0.8738 TO 0.8743 Inch (22.1945 to 22.2072 mm)	120-015-5A 0.9990 to 1.0000 Inch (25.3746 to 25.4000 mm)	Ring Stake T101873-11
D212-725-1-901	MS27643-3 0.7769 to 0.7774 Inch (19.7333 to 19.7460 mm)	120-013-3A 0.9060 to 0.90635 Inch (23.0124 to 23.0251 mm)	Ring Stake T101873-5

## Notes:

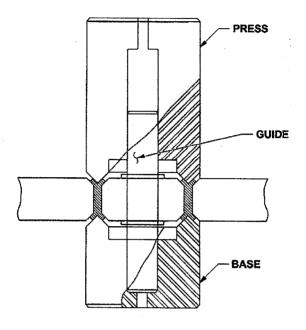
- 1 Install bearing/bearing sleeve with unreduced zinc chromate primer (Loctite 609 also acceptable) on faying surfaces.
- 2 Stake on both sides of sleeve



## MATERIAL: ANY ROUND ALLOY STOCK

NO.	REF LTR	DIMENSIONS
1	A	Slightly smaller than sleeve outside diameter.
2	В	Two times the bearing length.
3	С	Two times the bearing width.
4	D	Slightly smaller than bearing inside diameter.
5	E	Slightly longer than bearing or sleeve height/length.
6	F	Slightly larger than bearing or sleeve O.D.
7	G	Chamfer 0.025 inch (0.635 mm) by 45°.
8	н	Undercut 0.4 inch (10.16 mm) to provide clearance for shoulder diameter bearing inner ring.

Figure 1 – Bearing/Sleeve Removal and Installation Work aids



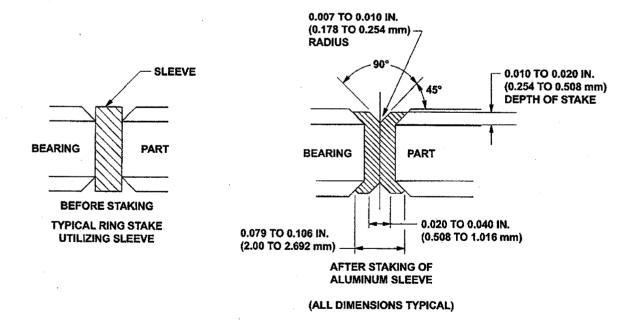


Figure 2 - Typical Ring Stake